

**ABSTRACT**

The present invention relates to methods and compositions for using nucleotide sequence variations of 16S and 23S rRNA within the *B. cereus* group to discriminate a highly infectious bacterium *B. anthracis* from closely related  
5 microorganisms. Sequence variations in the 16S and 23S rRNA of the *B. cereus* subgroup including *B. anthracis* are utilized to construct an array that can detect these sequence variations through selective hybridizations and discriminate *B. cereus* group that includes *B. anthracis*. Discrimination of single base differences in rRNA was achieved with a microchip during analysis of *B. cereus* group isolates from both  
10 single and in mixed samples, as well as identification of polymorphic sites. Successful use of a microchip to determine the appropriate subgroup classification using eight reference microorganisms from the *B. cereus* group as a study set, was demonstrated.